



MARBEFES PROJECT NEWSLETTER



**Linking marine biodiversity
to economic and cultural
valuation.**

December 2024 | Issue 2



Table of Content



>>> 03

Introduction

>>> 04

General Assembly

>>> 05

Embracing workshop

>>> 06

Exploring Coastal Connections

>>> 07

The BioBlitz

>>> 08

Educational activities

>>> 10

Ocean Literacy activities

>>> 12

Publications

>>> 17

Editorial Notes

www.marbefes.eu



Introduction



In this issue you will find selected information about events and achievements in the MARBEFES project in 2024

MARBEFES

A collective and multidisciplinary effort to

- Characterize marine biodiversity and link ecological structure to functioning across levels, from molecules to ecosystems.
- Define biodiversity-functioning-service links for key habitats and species in varied contexts.
- Assess ecological value in terms of fragility, connectivity, uniqueness, and vulnerability.
- Show how healthy biodiversity underpins ecosystem services and societal benefits.
- Apply natural capital accounting to value services and benefits.
- Advise on management to maximize ecological and economic value.
- Address global and European marine governance needs.
- Develop a toolbox for biodiversity valuation to guide policy and decision-making.



What is this all about

The **MARBEFES** (**M**arine **B**iodiversity and **E**cosystem **F**unctioning leading to **E**cosystem **S**ervices) project aims to deepen our understanding of the links between marine biodiversity, ecosystem functioning, and the societal benefits they provide. With a focus on valuing natural and social capital, MARBEFES employs innovative tools to assess ecological and socio-economic aspects across 12 Broad Belt Transects, spanning diverse habitats from the Arctic to the Mediterranean.

By bridging gaps in knowledge and moving beyond compartmentalized approaches to biodiversity, the project emphasizes the interconnectedness of ecosystems along the river-to-ocean gradient. Involving 23 expert partners, MARBEFES co-develops tools with stakeholders to enhance policy and governance, ensuring sustainable management of marine resources for current and future generations.

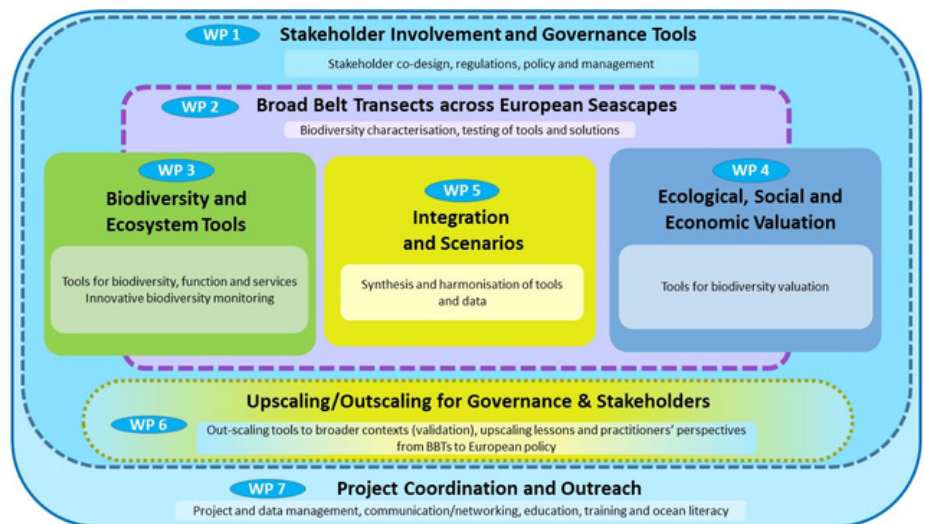
www.marbefes.eu

General Assembly



Representatives of the consortium members met in Dublin

The MARBEFES 3RD General Assembly convened from 22 to 24 October in Dublin, bringing together project partners to review progress, address current challenges, and outline future plans. Over the course of 16 sessions, participants engaged in discussions covering key aspects of the project's development and next steps.



A slide from Project Summary presentation by Julie Bremer



The meeting also included an insightful study visit to Bull Island in Dublin Bay, providing an excellent opportunity to explore local biodiversity and connect field observations to the project's objectives.



Photos: MARBEFES consortium members



Embracing workshop

Stakeholders and researchers discuss coastal management



A two-day workshop in March 2024 in Zandvoort, Netherlands, brought together stakeholders and researchers to discuss findings and co-design tools for managing marine and coastal areas. Surveys with over 230 stakeholders from 15 European coastal regions revealed key concerns: biodiversity, pollution, tourism, and the economy. Regional differences emerged, with Southern and Northern Europe focusing on local issues like fisheries, while Central Europe prioritized large-scale challenges such as harbors and renewable energy.

Ecosystem service valuation was seen as vital for addressing environmental challenges, preserving cultural heritage, resolving conflicts, and fostering collaboration. Stakeholders emphasized the need for Decision Support Tools (DSTs) that are user-friendly, data-driven, and include features like maps and real-time visualization for risk management and planning.

The workshop fostered trust and collaboration, ensuring research outcomes are practical and beneficial for sustainable coastal management.



photos: HuFoSS

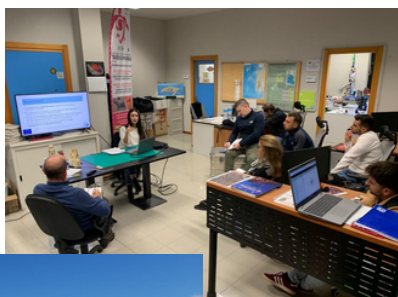
Exploring Coastal Connections:



Capturing Social and Cultural Benefits of Marine Environments

The socio-cultural valuation team is working on tools to capture the social and cultural benefits of marine environments, such as sense of place, cultural heritage, and relaxation. An online survey has been launched in four key locations: Morecambe Bay (Irish Sea), Bay of Santander (Gulf of Biscay), Gulf of Oristano (Sardinia), and the Belgian Coast. Open to residents, visitors, and coastal enthusiasts, the survey explores perceptions of coastal benefits, health, and management. Insights will help link these benefits to environmental health and policy-making. Meanwhile, University College Dublin has conducted interviews, focus groups, and creative workshops in Morecambe Bay to deepen understanding. More surveys in additional locations are planned soon.

We encourage you to participate and distribute!



From 1 to 5 December 2024, VLIZ and CNR joined forces to gather data for socio-cultural ecosystem valuation and discuss findings. We explored the coasts, interviewed locals and visitors, and integrated insights from ecology and the humanities. These findings will support MARBEFES by shedding light on how people perceive and value the local environment.



Photos: MARBEFES consortium members

The BioBlitz

Special event in Tromsø



The second Bioblitz event was held on June 26, 2024, at Telegrafbukta in Tromsø, with a focus on marine intertidal invertebrates as part of the MARBEFES project.



Photos: MARBEFES consortium members

Meanwhile, the results of last year's Bioblitz event in Sopot have been announced. During the event, over 600 species of land and marine macroorganisms were identified. Details and the database can be found at the following link: [Bioblitz Sopot](#).

Within the MARBEFES project we organise such events in all of the four regions:

**Sopot - June 2023,
Tromsø - June 2024,
Dublin - 2025,
Sardinia - 2025.**

What?

What is a Bioblitz?

A Bioblitz is a 24-hour species discovery challenge inspired by National Geographic. The goal is to identify as many species as possible within a specific area and timeframe.

How?

The Bioblitz team was investigating the low tide in Tromsø, where they collected invertebrates, photographed specimens, and worked on identifying species alongside marine biologists. Later, the gathered specimens were showcased in an exhibition outside Polaria and Oceania, close to the entrance of Framsenderet.

Experts gathering

Six professional institutes in Tromsø collaborated to make this event a success.

Educational activities



Joint action AZTI summer school 2024

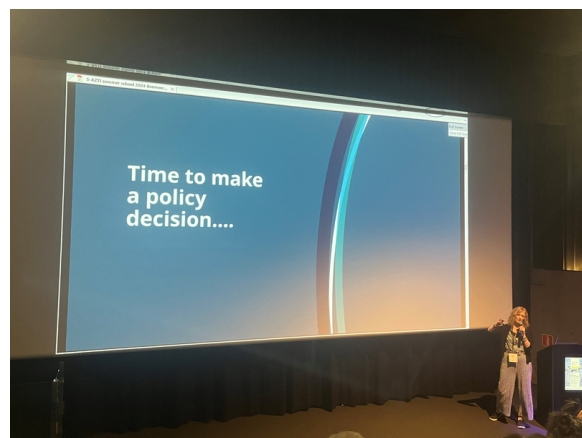


Held at the Aquarium Donostia-San Sebastián within the framework of several Horizon Europe projects—GES4SEAS, OBAMA-NEXT, BiOcean5D, ACTNOW, Marine SABRES, and **MARBEFES**—the course provided participants with both theoretical and practical tools to improve the connection between science and policy through effective communication.

The three-day program dedicated each day to a specific target audience. With contributions from scientists, journalists, practitioners, and managers, attendees explored diverse approaches to making scientific knowledge accessible and actionable for policymakers.

Bridging Science and Policy

This milestone edition created a collaborative space for participants to engage in meaningful debates and gain valuable insights into the critical intersection of marine science and policy. We extend our gratitude to everyone who contributed to this successful event!



Photos: MARBEFES consortium members

Educational activities



International School on INtegrated Environmental Studies in the Arctic (INES) with respect to climate changes.

The 5-day program, organized by the Institute of Oceanology PAN, covered a diverse range of disciplines, including climatology, atmospheric and marine chemistry, biology, physics, cryosphere studies, Arctic marine ecosystems, and the region's socio-economic development. One day was dedicated to biodiversity, highlighted by the **MARBEFES** project.

Each on-site day featured 2 to 3 lectures, each lasting 60 minutes, followed by dedicated practical sessions aboard the R/V Oceania, a research vessel operated by the Institute of Oceanology PAN. During the full-day cruise, participants worked in small teams on interdisciplinary projects, using real instruments under the guidance of eminent scientists and group mentors.

FROM ARCTIC TO ONE OCEAN

The primary aim of the School is to foster international and interdisciplinary collaboration in studying climate and ocean processes that shape the future environment, with a particular focus on the Arctic's natural ecosystem and its impact on both local and global communities.



Photos: Tomasz Kijewski

Ocean Literacy activities



European Researchers' Night

We engaged visitors in discussions on Ocean Literacy, encouraging them to reflect on the fragility and importance of the marine environment and its connection to human-induced changes. The conversation highlighted biodiversity, ecosystem shifts, and their potential impacts on fishing and tourism, with a focus on the MARBEFES project.



During the event, we explored the impact of storm waves on coastal environments, focusing on rising sea levels and their effects on coastlines and infrastructure. Participants gained insights into both effective and ineffective coastal management practices, with a particular emphasis on local threats related to these challenges.



The event

European Researchers' Night is an annual event that showcases the fascinating world of research and innovation to the public. It takes place across Europe and neighboring countries, typically on the last Friday of September. The initiative is aimed at promoting careers in research and bridging the gap between scientists and the general public. This year the IO PAN team joined the event as a guests in the Experyment Science Centre in Gdynia



Photos: .Experyment Science Centre. Tomek Kamiński

Ocean Literacy activities



Three steps to sea

The first two short films from the "3 Steps into the Sea" series are now available on social media. Each of the four planned episodes focuses on a different BBT and serves as a compelling inspiration to reflect on the state and changes in the biodiversity of Europe's coastal ecosystems, from the Arctic to the Mediterranean.

Enjoy watching!



[E2: BBT Tromsø](#)



I live by the Sea Contest



Photos: I live by the Sea

Another excellent example is the collaboration between Today We Have, IOPAN, and HCMR in organizing the I Live by the Sea Contest. The contest aims to provide a platform for sharing knowledge and experiences about the ocean. Participants contribute photos or short films accompanied by brief stories. This year, the top photos, along with highlights from the best films and stories, were showcased for over two months at the stunning Cretaquarium in Crete.

Publications

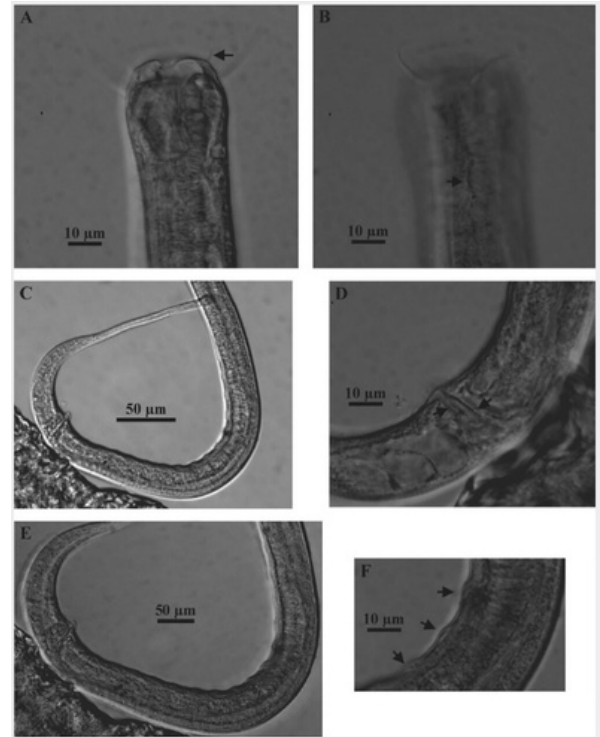
Biodiversity Under Threat: Nematodes, Intertidal Zones, and Environmental Insights



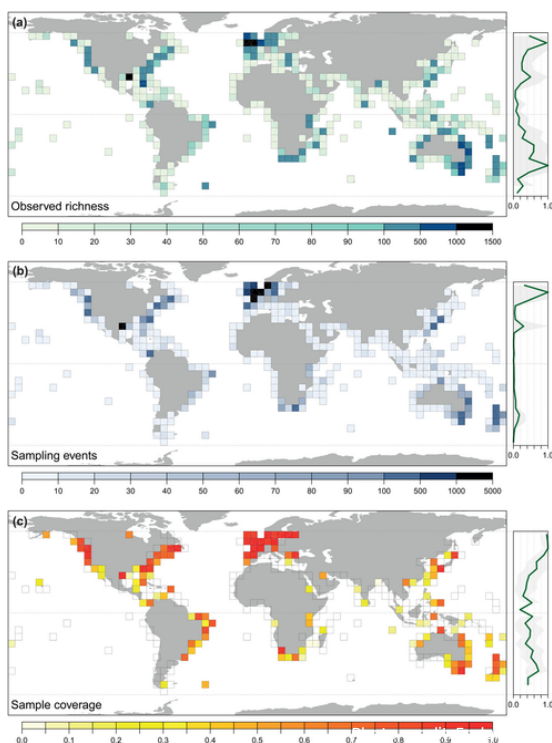
Taxonomic and functional diversity of nematode fauna: two sides of the same coin in the ecological quality assessment of transitional environments.

The study in Cabras Lagoon (Italy) found nematodes' taxonomic and functional traits sensitive to salinity and organic matter, with stable maturity indices reflecting adaptation to brackish habitats. Taxonomic structure was the most sensitive metric, showing significant responses to environmental factors. Temperature influenced faunal composition, abundance, and diversity by affecting fecundity and life cycles. Nematodes effectively indicated ecological quality, highlighting the value of integrating taxonomic and functional analyses.

[DOI: 10.1016/j.ecss.2023.108550](https://doi.org/10.1016/j.ecss.2023.108550)



Stylotheristus.sp – one of the research subjects. Photo from plazi.org.



Graphs from original paper; Global distribution maps of intertidal records retrieved from the OBIS biodiversity database.

Shallow coverage in shallow waters: the incompleteness of intertidal species inventories in biodiversity database records.

A study by Thyrring et al. highlights gaps and biases in global biodiversity data for intertidal zones, crucial for understanding climate change impacts. Despite being easier to access, data from intertidal zones shows uneven sampling. Mid-latitudes exhibit higher observed species richness, while tropical areas have many missing records due to less sampling effort.

And indeed, even Europe is not evenly mapped in this regard.

[DOI: 10.1111/ecog.07006](https://doi.org/10.1111/ecog.07006)

Publications



From Arctic to Mediterranean: Balancing Conservation and Economic Insights

Ecosystem Accounting for Marine-Based Tourism provided by *Posidonia oceanica* in Italy.

This study presents Italy's first ecosystem accounts for Marine-Based Tourism (MBT), linking biophysical and economic data within the SEEA EA framework. Focusing on *Posidonia oceanica*, it quantifies its contribution to MBT, valued at €6M in 2019 and €3.7M in 2021. The findings highlight the habitat's significance for tourism and the need for better data to support marine ecosystem accounting.

[DOI: 10.3897/oneeco.9.e129751](https://doi.org/10.3897/oneeco.9.e129751)



Linking marine habitats and economic values: A spatial scaling methodology for valuing societal benefits.

A new methodology estimates the spatial monetary value of marine environments, linking natural capital to ecosystem services. Applied to Northern Ireland's waters, the 2019 societal benefits were valued at £51.1–83.3M. The BEACH tool, developed and proposed here, simplifies valuation for stakeholders, supporting environmental planning and management.

[DOI: 10.1016/j.ecolecon.2024.108316](https://doi.org/10.1016/j.ecolecon.2024.108316)

Publications



Transforming Arctic Landscapes: Biodiversity and Human Adaptation on Svalbard

Forty years of warming: Environmental change in marine coastal habitats on Svalbard between 1981 and 2022.

This paper compiles observations from various databases on marine habitats, focusing on biodiversity and ecosystem changes driven by borealisation of the European Arctic and sea ice loss. It highlights past climate conditions on Svalbard, such as glacier absence, ecological succession and polar bear retreat, to assess current coastal habitat trends and their potential consequences.

[DOI: 10.24425/ppr.2024.149207](https://doi.org/10.24425/ppr.2024.149207)



Socio-economic transformation follows environmental change on Svalbard.

Recent research highlights rapid environmental changes in the European Arctic, focusing on Svalbard, where warming temperatures and melting ice are transforming natural and human landscapes. Key findings include expanding biodiversity, shifts in the food web, and new coastal habitats due to glacier retreat. Human activity has shifted from mining to scientific research and ecotourism, supported by strict environmental regulations that protect this unique region. Svalbard exemplifies a delicate balance between conservation, exploration, and sustainable tourism in a rapidly changing Arctic.

[DOI: 10.24425/ppr.2024.150881](https://doi.org/10.24425/ppr.2024.150881)

Publications



Macrophyte Carbon Strategies and Seaweed Phenology under Warming

Species-specific responses of macrophyte production to the increasing CO₂ environment with potential ecosystem implications involved in the Baltic Sea.

This study examines carbon use strategies in macrophytes (macroalgae, charophytes, seagrass, and angiosperms) in the northeastern Baltic Sea, focusing on their response to elevated CO₂ levels. Using carbon isotopes, pH drift experiments, and habitat mapping, it predicts enhanced photosynthesis and productivity due to rising CO₂. Shallow and deep-water species may benefit, while intermediate communities, like *Fucus vesiculosus*, could lose fitness.

[DOI: 10.1007/s10811-023-03047-3](https://doi.org/10.1007/s10811-023-03047-3)



photo by Piotr Balazy

Persistence in a tropical transition zone? *Sargassum* forests alternate seasonal growth forms to maintain productivity in warming waters at the expense of annual biomass production

This study examines how *Sargassum hemiphyllum*, a forest-forming seaweed in a tropical-temperate transition zone (Hong Kong), responds to seasonal changes in temperature and light. Field and lab experiments revealed peak photosynthesis during summer dormancy, suggesting resilience to warming. However, shorter growth seasons and reduced annual biomass under warming could lower macroalgal forest productivity.

[DOI: 10.1016/j.scitotenv.2022.158154](https://doi.org/10.1016/j.scitotenv.2022.158154)



Publications



Macrophyte Carbon Strategies and Seaweed Phenology under Warming

Quantifying the role of saltmarsh as a vulnerable carbon sink: A case study from Northern Portugal

This study assessed Blue Carbon stocks in three northern Portuguese saltmarshes (Minho, Lima, and Cávado) and their vulnerability to sea level rise (SLR) based on IPCC AR6 scenarios. The marshes store $38,798 \pm 2880$ t of organic carbon, valued at $\text{€}3.96 \pm 0.38\text{M}$. SLR threatens significant habitat and carbon loss, with CO_2 emissions projected at 22,000–130,000 t by 2100, emphasizing the need for conservation.

[DOI: 10.1016/j.scitotenv.2024.171443](https://doi.org/10.1016/j.scitotenv.2024.171443)

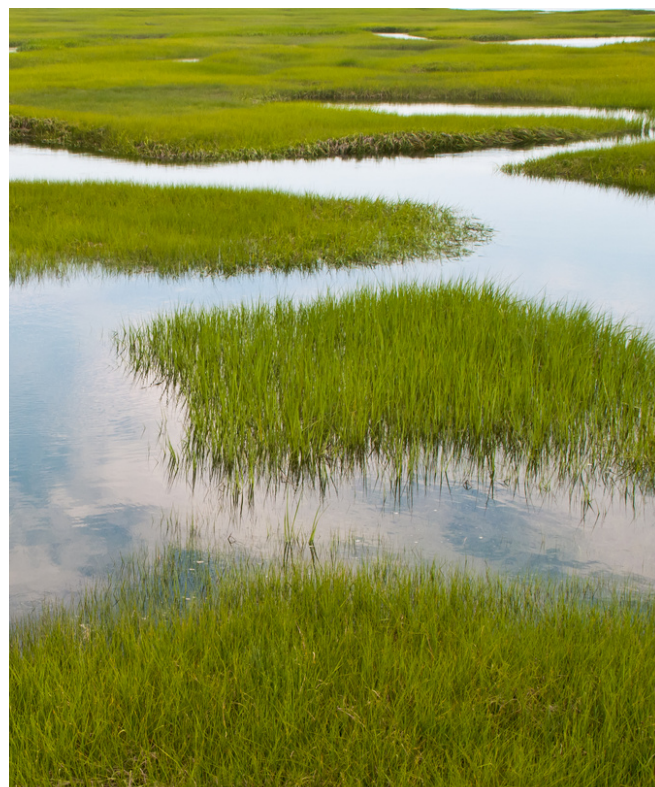


Photo: Sabine Cochrane / Akvaplan-nivaa

Marine biodiversity, ecosystem function, services, and societal benefit

FRAM – High North Research Center for Climate and Environment has published an article introducing readers to the central concept of the MARBEFES project. The piece explores the project's overarching goals, focusing on the Norwegian coastline while also addressing its broader European context. By highlighting both local and continental perspectives, the article underscores MARBEFES' efforts to enhance understanding of marine biodiversity and its value to society.

[Framforum.com](https://framforum.com)



Editorial Notes



Issue #2

December 2024

Follow Us

Webpage: www.marbefes.eu

Twitter: twitter.com/marbefes

Facebook: www.facebook.com/MARBEFES

Instagram: www.instagram.com/marbefes/

Subscribe:

Write to marbefes@iopan.pl or click the subscribe button on the first page of this issue.

Cover photo and all unsigned photos from Canva stock

*This newsletter is compiled by
the MARBEFES project partners.*